

2.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

This chapter explains the purpose of the proposed project and cites the reasons that the project is needed. Both the purpose and the need are explained in detail.

2.1 Purpose of the Proposed Action

The purpose of the Interstate 94 (I-94) Rehabilitation Project is to improve capacity, safety, pavement, and bridges in a 6.7 mile segment of I-94 in the city of Detroit. The project will also enhance local traffic circulation by separating local traffic from I-94 traffic. The project area is shown on [Figure 2-1](#).

The section of I-94 proposed for rehabilitation was constructed in the late 1940s and early 1950s and is one of the oldest urban interstates in the country. The project portion of I-94 is deteriorating and requires frequent maintenance. It also has an outdated design at various segments and interchanges. Obsolete design and high traffic volumes contribute to inadequate capacity, especially during the morning and evening rush hours. The Average Annual Daily Traffic (AADT) in the project area ranges from 120,000 to over 160,000 vehicles and is expected to grow by more than 25 percent by the year 2020. This growth does not account for future heavy-truck demand, which is difficult to predict. Because of I-94's link to international border crossings and the growing economy in southeast Michigan, the volume of heavy truck traffic on southeast Michigan interstates is expected to grow three times faster than passenger vehicle volume.

2.2 Project Background

Southeast Michigan is an important industrial center between Toronto and Chicago, and I-94 is a primary east-west connector linking Michigan to Ontario, Canada, Indiana, Illinois, and Wisconsin. I-94 functions as a central and critical link in an extensive freeway system that is vital to the economy of southeast Michigan, the state of Michigan, and the nation ([Figure 2-2](#)).

International trade is increasingly important to Michigan's economy. The North American Free Trade Agreement (NAFTA) reinforces the globalization of Michigan's economy. In 1996 the Detroit area was the nation's top exporting metropolis, selling a total of \$27.5 billion in merchandise to foreign markets, according to *Metropolitan Area Exports* (U.S. Department of Commerce, 1996). The ability of the region and state to compete successfully depends, in part, on the quality of the region's transportation system.

Several studies completed in the last 12 years by the Michigan Department of Transportation (MDOT), the Southeast Michigan Council of Governments (SEMCOG) (the Detroit Metropolitan Planning Organization [MPO]), and the city of Detroit highlight the critical role of I-94 as part of the interstate system in southeast Michigan. These studies are discussed in the following reports:

- *An Image Renaissance: Detroit I-94 - U.S. 10 Entrance Corridor*, Wickens, 1986.

- *Greater Detroit Area Freeway Rehabilitation Program Study*, Michigan Department of Transportation, 1990.
- *2015 Regional Transportation Plan for Southeast Michigan*, Southeast Michigan Council of Governments, 1993.
- *A Framework for Action: Recommendations of the Mayor's Land Use Task Force*, City of Detroit, 1995.
- *Jump-Starting the Motor City – Detroit Empowerment Zone*, City of Detroit, 1994.
- *2015 Regional Transportation Plan for Southeast Michigan*, Southeast Michigan Council of Governments, 1993.
- *2020 Regional Transportation Plan for Southeast Michigan*, Southeast Michigan Council of Governments, 1997.

The 2015 Regional Transportation Plan (RTP) for southeast Michigan first identified I-94 as a study corridor with capacity, bridge, and pavement deficiencies. The plan recommended that a detailed study of the area be undertaken to find appropriate solutions to the problems evident within the corridor. The *Greater Detroit Area Freeway Rehabilitation Program Study* concurred with the findings and identified I-94 as the freeway in greatest need for improvement. The other reports support the crucial role of I-94 and the need to make transportation investments within the project area to preserve and enhance the region's economic vitality and quality of life.

The contribution of I-94 to Detroit and the region and its role as part of an international trade corridor continue to grow at a rapid rate. NAFTA has resulted in sharp growth in the area's cross-border freight traffic. I-94 connects the Michigan interstate system to Detroit and some of the busiest border crossings in North America: the Ambassador Bridge and the Detroit-Windsor Tunnel in Detroit, and the Blue Water Bridge in Port Huron ([Figure 2-3](#)). Southeast Michigan's three international crossings carry most of the U.S.-Canadian border traffic. Approximately 2.9 million trucks and 80 billion U.S. dollars in trade crossed the Ambassador Bridge in 1998. This volume of trucks was more than at any other border crossing in North America. The next busiest crossing, at Laredo, Texas, carried approximately one-half that volume. In 1992, the volume of two-way trade at Michigan border crossings equaled the total for the California-Mexico and Texas-Mexico border crossings combined. The Intermodal Surface Transportation Efficiency Act (ISTEA) designated the I-69 corridor, which is a north-south interstate in Michigan, as a "High Priority Corridor." I-94 is a part of that corridor. The designation indicates the importance of the corridor in the region.

I-94 also links regional airports in southeast Michigan, including Detroit Metropolitan Wayne County, Willow Run, Detroit City, and Ann Arbor ([Figure 2-4](#)). I-94 is the primary access to the proposed regional intermodal freight facility in southwest Detroit ([Figure 2-1](#)). I-94, along with I-75 and I-96, forms the core of Michigan's interstate system. In addition to international and interstate traffic along I-94, traffic from all parts of southeast Michigan use I-94 to access cultural, institutional, and major employment centers in Detroit ([Figure 2-5](#)). Industries outside the project limits use I-94 to ship products to users in Detroit and beyond.

The city of Detroit is experiencing an economic renaissance resulting from several redevelopment activities. The project area includes locations that are candidates for residential, commercial, recreational, and industrial redevelopment.

Some of the large traffic generators that are dependent on I-94 include Wayne State University (WSU), the New Center area, the General Motors Cadillac Plant, the Detroit Medical Center, Wayne County Community College, the Center for Creative Studies, General Motors World Headquarters, Henry Ford Hospital, the Detroit Institute of Arts, and the Museum of African American History ([Figure 2-5](#)).

2.3 Description of the Project Limits

The project is 6.7 miles long and extends along I-94 (which is also known as the Edsel Ford Freeway) from just east of the I-94/I-96 interchange to the Conner Avenue interchange. The study area, for traffic analysis purposes, extends from Wyoming Avenue in the city of Detroit to I-696 in Macomb County ([Figure 2-1](#)). The traffic analysis includes an area of I-94 proposed for future projects and includes the major facilities of I-96, M-10 (the John C. Lodge Freeway), I-75 (the Chrysler Freeway), and I-696. Within the short distance of approximately 1.2 miles, I-94 intersects I-96, M-10, and I-75. Reconstruction of the M-10 and I-75 interchanges, which are nearly at the end of their useful life, are included as part of this study. To describe and analyze the project, I-94 has been divided into the following segments ([Figure 2-6](#)):

- Segment A extends from east of I-96 to Cass Avenue, and along the M-10 (Lodge Freeway) north to Pallister Avenue and south to Forest Street.
- Segment B extends from Cass Avenue to Chene Street, and along the I-75 (Chrysler Freeway) north to Grand Boulevard and south to Warren Avenue.
- Segment C extends from Chene Street to Conner Street.

2.4 Description of the Project

The Build Alternative, described in detail in Chapter 4, includes four below-grade mainline lanes in each direction, a reserved median space, acceleration and deceleration lanes at various locations, and I-94/M-10 and I-94/I-75 interchange reconstruction. The proposed Build Alternative includes a ground level, one-way continuous service drive with three lanes in each direction, shoulders, and sidewalks on each side of I-94. The proposed typical section is shown in [Figure 2-7](#).

2.5 Need for the Proposed Action

Construction on the project portion of I-94 began in 1947 and was completed in the early 1950s. The deteriorated condition, inadequate roadway capacity, and outdated design of this segment of I-94 drive the need for reconstruction and rehabilitation. The proposed project will enhance I-94 so that it can function as a modern interstate and meet the traffic demands of a growing region.

Local traffic mixes with through traffic because of lack of continuous surface streets. The result is that traffic on the interstate is increased and adds to congestion. Local traffic uses the exit and entrance ramps, and adds to weaving that in turns results in traffic slowdown and increased crashes.

2.5.1 Sufficiency Rating

The condition of I-94 within the project area is described by sufficiency rating scores given to the various segments of I-94 and its interchanges with M-10 and I-75. MDOT produces a sufficiency report, which includes a point system for evaluating and comparing the adequacy of each segment of roadway under state jurisdiction. The sufficiency rating is a combination of points from four categories: number of traffic crashes, roadway capacity, physical condition of the roadway base, and physical condition of the roadway surface. The maximum points for these categories are 30, 30, 15, and 25, respectively. As shown in Table 2-1, a facility in excellent condition has a sufficiency rating between 90 and 100 points.

Table 2-1
MDOT Sufficiency Ratings

Rating Scale	Description
0-49	Poor
50-64	Tolerable
65-79	Fair
80-89	Good
90-100	Excellent

Table 2-2 contains the sufficiency ratings for I-94, M-10, and I-75. This table indicates that segments within the project area are in poor condition, except for one segment on M-10 and one segment on I-75 that are ranked as tolerable.

An analysis of each of the categories indicates that all of the segments have adequate base and drainage, but the other components (pavement surface, crash rate, and capacity) are deficient.

2.5.2 Bridge Conditions

I-94 bridge superstructures are constructed of steel that requires maintenance because of harsh weather conditions and the use of salt for de-icing. Condition ratings for bridge decks, superstructures, and substructures indicate that many of the bridges within the project limits need major repairs. In addition, the bridges on or over I-94 have loading and structural deficiencies and limited vertical clearances (the height of a bridge above the pavement). The vertical clearances at many of the overpass structures are less than the current MDOT minimum standard of 14.5 feet. The 1998 MDOT bridge sufficiency ratings list 57 bridges within the project limits. Thirty-six are rated structurally deficient and eight are rated functionally obsolete. The bridges require either extensive repair or complete replacement. In addition to being structurally deficient or obsolete, the bridges

are discolored and deteriorated and are visibly in need of repair. The bridges need to be replaced to alleviate the amount of maintenance necessary and to accommodate addition of mainline lanes. Replacement also would improve the aesthetics of the interstate.

Table 2-2
MDOT 1998 Sufficiency Ratings for I-94, M-10, and I-75

Segment	Kilometers	Miles	Sufficiency Rating	Description
I-94 Mainline				
I-96 to M-10	2.13	1.32	36	Poor
M-10 to I-75	1.81	1.12	39	Poor
I-75 to Mt. Elliott	2.34	1.45	39	Poor
Mt. Elliott to Gratiot	2.68	1.66	31	Poor
Gratiot to Conner	1.66	1.03	36	Poor
M-10				
Canfield to I-94	2.29	1.42	53	Tolerable
I-94 to Euclid	3.06	1.90	44	Poor
I-75				
Canfield to I-94	2.30	1.43	53	Tolerable
I-94 to Euclid	2.66	1.65	44	Poor

2.5.3 Traffic Congestion

The AADT on I-94 in the study area ranges from 120,000 to over 160,000 vehicles and is expected to grow by more than 25 percent by the year 2020. This growth does not account for future demand by heavy trucks. Truck traffic has been growing steadily on I-94 at a rate of 5 to 7 percent each year. Current truck traffic ranges from 5 to 10 percent of the total traffic within the project limits.

SEMCOG's 2015, 2020, and 2025 Regional Transportation Plans (RTPs) identified I-94 as capacity deficient. I-94 within the project limits is currently operating over capacity. The number of lanes is not sufficient to efficiently carry the number of vehicles that use the facility.

Level of service (LOS) is a qualitative measure describing operational conditions of traffic, generally defined in terms of speed and travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. In other words, level of service describes the degree of congestion. LOS A represents the best operating conditions and LOS F represents the worst. Definitions of operating conditions associated with different service levels are:

- LOS A: Free flow – no restrictions on operating speed
- LOS B: Stable flow – few speed restrictions
- LOS C: Stable flow, higher volumes – restricted speed and lane change
- LOS D: Approaching unstable flow – little freedom to maneuver
- LOS E: Unstable flow – lower speed with some stops

- LOS F: Forced flow – low speed with many stops

MDOT considers LOS A through D desirable for Michigan roadways and LOS E undesirable but acceptable in urban areas if limited to peak hours. I-94 currently operates at LOS E and F within the project limits. As traffic volumes increase in the future, the level of service will become worse. Increased congestion would adversely impact the economy of southeast Michigan by increasing the cost of travel, which is a significant component of business cost. It has been estimated that transportation costs and the related burden of carrying excessive inventory can easily swamp direct labor costs. Both of these major expenses are closely tied to the capacity, speed, and flexibility of the transportation infrastructure. The addition of a through traffic lane in each direction would increase the capacity of the roadway and improve the level of service.

Although I-94 is a six-lane facility (three lanes in either direction), it is functioning at something less than that, in part because of the lack of auxiliary and acceleration/deceleration lanes. Without acceleration lanes, vehicles enter the facility at a reduced speed and cause through vehicles in the outside lanes to slow down. Vehicles exiting I-94 slow down in the outside through lanes because no separate deceleration lanes exist. Therefore, the outside lanes carry relatively little traffic because through traffic uses inside lanes to avoid these slowdowns and other potential problems associated with entering and exiting vehicles. Traffic merges and exits at distances less than that required by current American Association of State Highway and Transportation Officials (AASHTO) design standards, which provide greater distances for traffic turbulence to subside. The short distance results in weaving problems. The addition of acceleration and deceleration lanes would improve operations of through traffic.

Traffic using I-94 in the project section during peak hours, particularly the evening period, operates under congested conditions resulting in frequent stopping of vehicles. This situation is often made worse by traffic incidents that block the interstate. Inadequate shoulder width prevents disabled vehicles with mechanical failure or flat tires to park completely out of the outside driving lane. Vehicles in that lane must slow to avoid the disabled vehicles. Increasing the width of the shoulders would enable disabled vehicles to park out of the driving lane and would improve safety conditions for drivers and stranded motorists.

2.5.4 Local Traffic

Some of the traffic using I-94 and contributing to traffic congestion is local traffic that uses the interstate to travel short distances because some surface streets are not continuous across freeways. Short distance use of I-94 results in entering and exiting traffic and weaving. This adds congestion to the interstate regional traffic. Construction of continuous service drives would separate local traffic from regional traffic. This would result in reduced traffic volumes on the mainline, less traffic on entrance and exit ramps, increased safety, and improved access to adjacent development.

2.5.5 Safety

Traffic crashes cause property damage, injuries, and loss of life and also add to driver delay and frustration. The number of traffic crashes at many locations within the project area is more than twice the average expected of similar locations in southeast Michigan (Appendix B).

Traffic management on the interstate system is especially difficult when traffic incidents occur. Traffic along I-94 is often delayed for long periods of time while traffic crashes are investigated and cleared. Because I-94 is used extensively by local and regional traffic and for regional, interstate, and international goods movement, traveler delay and lost productivity caused by traffic crashes can be extensive.

Many locations within the project area contribute to the number and severity of traffic crashes. For instance, the current configuration of the M-10 interchange allows for left-hand exits which, when coupled with the close spacing of other interchanges within the project area, encourages vehicles to weave across lanes on I-94 at relatively high speeds. Also, of the 44 major ramp-to-ramp segments identified along I-94, 20 have crash rates exceeding the average of 350 crashes per 100 million vehicle miles (MVM) for freeways in the Detroit metropolitan area. In addition to human and economic losses that result from these crashes, traffic flow is significantly disrupted. According to SEMCOG's 2020 Regional Transportation Plan, over 40 percent of all congestion in urban areas is due to traffic incidents, which are predominantly traffic crashes. Improvements to the I-94 design would contribute to the reduction of the number and severity of traffic crashes and at the same time improve the level of service in the study area. The improvements would provide better emergency-vehicle access on the service drives to crashes. In addition, mainline traffic could use the service drives to detour around crashes.

2.5.6 Transit, Pedestrians, and Bicyclists

Twenty-four percent of those responding to the Citizens Impact Survey taken in the project area do not own a car (Appendix C). According to the survey, 16 percent use transit, which makes it an important element in providing mobility to the area's population. Although I-94 is a direct route to downtown Detroit and other important destinations, it is not conducive to bus use. Many of the surface streets in the project area are circuitous, and the service drives are not continuous. Buses do not have easy access to I-94. Continuous service drives would allow through travel adjacent to I-94 for buses, and the proposed reserve space in the center would provide space for possible future transit use. Improvements to I-94 would provide opportunities for improved transit.

Pedestrians and bicyclists have no through access adjacent to I-94 because sidewalks are discontinuous. Although sidewalks are present along the existing service drives, the sidewalks end where the service drives end. Continuous service drives with sidewalks would provide through travel for cars and safer conditions for pedestrians and bicyclists. Some of the existing pedestrian bridges, which are used by pedestrian and bicyclists, are in poor repair and in need of replacement. All pedestrian bridges would be evaluated during the design process. Some pedestrian bridges would be combined with vehicular

bridges that would have sidewalks and others would be replaced as pedestrian bridges. Some, if evaluations indicate that the bridges were not being used, would be eliminated. Elimination of any pedestrian bridge would occur only after technical data justified elimination and the public was notified and asked for comments.

Existing sidewalks are not in compliance with the Americans with Disabilities Act (ADA) and do not have roll-over curbs for wheelchairs. The new pedestrian facilities, including pedestrian signals, would be in compliance with ADA regulations.

2.6 Project Goals and Objectives

The Interagency Coordination Committee (ICC), composed of representatives of MDOT, SEMCOG, the Detroit Department of Transportation (DDOT), Wayne County, Macomb County, the Suburban Mobility Authority for Regional Transportation (SMART), the city of Detroit, and the Federal Highway Administration (FHWA), was established to guide development of the I-94 Rehabilitation Project. Based on an analysis of the need for the project and information collected at various meetings held in the initial stages of the study, the ICC developed four goals for the project. After these goals were identified, specific objectives were developed for each goal. The objectives provide means to achieve study goals and an effective framework to assess the alternatives that are considered in this DEIS. The four goals and their associated objectives are described below.

Goal 1—Mobility. Maintain and enhance safe and efficient transportation for passengers and freight on I-94 including the M-10 and I-75 interchanges.

Objectives:

- Manage congestion and reduce travel times
- Improve traffic operations and reduce the number of crashes
- Reduce transit travel times and enhance the comfort and convenience of transit riders
- Encourage use of multiple-occupancy vehicles
- Facilitate more efficient international transportation at border crossings

Goal 2—Access and Development. Improve access and enhance the potential for economic development in the I-94 rehabilitation corridor and adjacent areas.

Objectives:

- Improve access from multiple origins via I-94
- Maintain or improve access to residential neighborhoods on I-94
- Maintain or improve access to existing and potential manufacturing, commercial, and freight destinations in the project area
- Coordinate planning and development activities to maximize access to new developments
- Improve the project area's attractiveness for business and residential development.
- Maximize the project area's contribution as part of a gateway to Detroit

Goal 3—Environment. Maintain and enhance the beneficial social, economic, and environmental effects of the I-94 rehabilitation corridor while minimizing adverse impacts.

Objectives:

- Maintain and/or improve aesthetics within the project area
- Maximize the potential for redesign and improve the reconstruction for neighborhood livability, including the enhancement of recreational opportunities
- Minimize the roadway's impact as a divider of communities and neighborhoods
- Minimize noise and air quality impacts
- Improve the economic well being of families and neighborhoods in the project area

Goal 4—Cost Effectiveness. Develop an efficient transportation system that maximizes return on limited resources, recognizing that benefits include enhancements to accessibility, community cohesion, job development potential, and service to transit users.

Objectives:

- Minimize capital, operating, and maintenance costs
- Minimize transportation and neighborhood disruptions during construction

2.7 Summary

The analyses of traffic operations, traffic crash rates, and infrastructure deficiencies demonstrate the need for improvements within the I-94 project area. The I-94 Rehabilitation Project is needed to:

- Provide a safe, efficient facility to enhance the economy of Detroit and southeast Michigan
- Provide an additional mainline driving lane to increase capacity
- Provide continuous service drives to:
 - Provide local traffic better access to adjacent properties and development
 - Accommodate buses
 - Provide detours for mainline traffic during traffic incidents
 - Provide better access for emergency vehicles
 - Reduce traffic disruption during construction of the I-94 mainline
- Replace structurally deficient bridges
- Eliminate left exits and entrances to reduce weaving
- Provide sidewalks for pedestrians
- Provide acceleration/deceleration lanes to improve traffic operation and safety
- Provide shoulders to accommodate disabled vehicles
- Provide a visually pleasing facility to enhance adjacent communities and provide a pleasant driving experience

The improvements will provide Detroit and southeast Michigan a safe, modern, structurally sound, efficient, and visually pleasing interstate to accommodate regional, commercial, and local traffic.